Easy Instructions

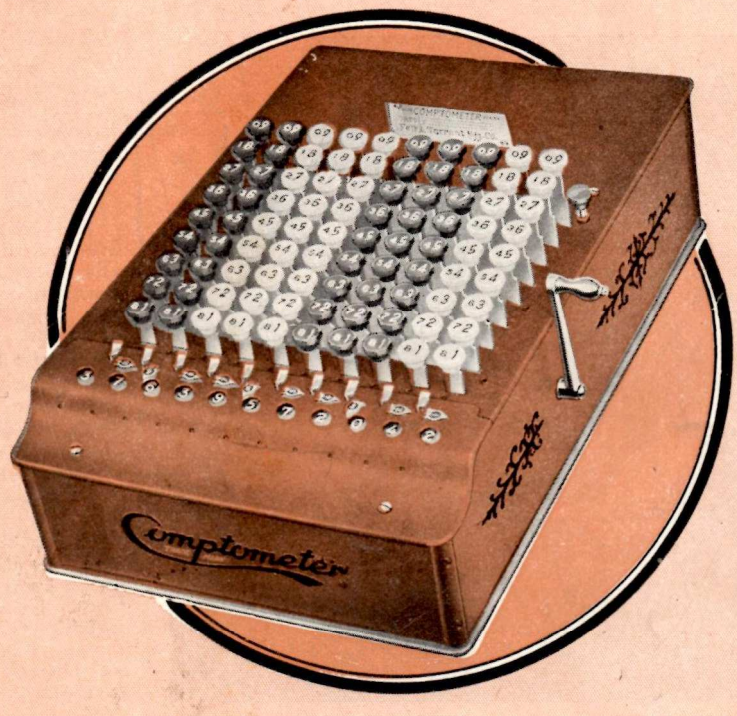
for Operating the

CONTROLLED KEY

Comptometer

REG. TRADE MARK

ADDING AND CALCULATING MACHINE



FELT & TARRANT, LTD., CHICAGO, ILL.

Felt & Tarrant Mfg. Co.

1713-1735 North Paulina St.

Chicago, Ill.

Wilson R. Peacock

PHONE- 6-407

OTTAWA, ONT.

EASY INSTRUCTIONS FOR OPERATING

THE COMPTOMETER IS A HIGH-SPEED, DIRECT-ACTING, EASILY-PORTABLE DESK MACHINE FOR BOTH ADDING AND CALCULATING

THE operation of the Comptometer is extremely simple—nothing to do but press the keys—the machine does the rest.

An Automatic Safeguard, known as the "Controlled-key"—an exclusive feature found only in the Comptometer—positively prevents the registering of an error from a partial or incomplete key-stroke.

How the Controlled-Key Blocks Short Key-Strokes

This is how it does it.

The operator added right along down to 42.25. **Then something happened.** She slighted a key stroke—didn't put the 4-key clear down.

Did she notice it?

She couldn't help it. The machine automatically locked up and refused to add another figure until the fault was corrected.

Did she have to cancel and add the columns all over again?

No, she simply completed the unfinished stroke, touched the release key and went right on.

It was the **Controlled-key** that did it. Like a sentinel on guard, the Controlled-key stands watch over every key-stroke. **It will not permit an imperfect key-stroke to register an error.**

Only when a fault occurs that would otherwise produce an error, does the Controlled-key clamp on the brakes.

That is why, even in the hands of a beginner, it will not permit an incomplete key-stroke to register an error. Every key-stroke must give the **right answer or none at all.**

See page eight for instructions on "When the Machine Locks in Adding."

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

Copyright 1920, by FELT & TARRANT MFG. CO., CHICAGO.

EASY INSTRUCTIONS FOR OPERATING

ADDITION RULES

THE two white columns of keys on the right side of the keyboard are for adding units and tens of cents. The next three black columns are for adding units, tens and hundreds of dollars. The next three white columns of keys are for adding thousands, tens of thousands and hundreds of thousands of dollars. Of course the keys farther to the left are for adding higher denominations of dollars. By "column" of keys is meant the keys in the same up and down line, reading from 1 to 9.

When adding, the keys are used according to the large figures on them. To add $4.00, locate the units of dollars column (which is the 3rd column from the right) and strike the key having on it a large 4. No keys are struck for ciphers. To add $404.00 strike the 4 key in the hundreds of dollars column and skip the tens of dollars column and add 4 in the units of dollars column.

Always add the items from the top item downward and it is always best for a beginner to keep the place with the index finger of the left hand, running the finger down the column of figures while adding it.

The keys should be operated only one at a time. For instance in adding 235, press down the 2 key, then the 3 key and then the 5 key.

Remember to place the finger on the key desired and push it down until you feel it strike bottom. This push-stroke requires practice, for it differs distinctly from the sharp, staccato blow on a typewriter. It is the easiest known stroke on the fingers, for the blow of hitting the key is done away with. This method of operating insures absolute accuracy and fair speed in the beginning and ultimately becomes very rapid.

For the first few days go very slowly, memorizing the keyboard and acquiring the stroke. Speed will come later.

Between the repeated depressions of a key as in adding 6 by depressing 3 and 3; or where the same figure is added twice as in adding $50.00 and $50.00, always lift the finger slightly off the key after each stroke. Lift the finger off the key about ¼ of an inch. Do not lift the finger way up high, but just enough so it will be off the key. Watch this carefully at first, and the sense of touch will soon develop so that you will, without any conscious effort, always lift the fingers slightly off the key before making the next stroke.

Always prove an addition by adding it again. Re-addition of the original figures is of course the quickest, easiest and surest method.

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

ADDITION RULES

Sight Method, Adding Each Item Complete

OFTEN it is necessary to add each item complete—that is not adding the dollars and cents separately. This is especially so in adding from different book pages or adding slips or checks, or making cross additions, or when adding amounts not written in columns, or in adding amounts that are not dollars and cents.

When adding each item separately and completely, use only the first and second fingers and add all figures with the first finger, except the right-hand figure which should be added with the second finger.

Remember to place the finger on the key desired, and push it down until you feel it strike bottom. This push-stroke requires practice, for it differs distinctly from the sharp, staccato blow of a typewriter. It is the easiest known stroke on the finger, for the blow of hitting the key is done away with. This method of operating insures absolute accuracy and fair speed in the beginning and ultimately becomes very rapid.

For the first few days go very slowly, memorizing the keyboard and acquiring the stroke. Speed will come later.

No. 1	*No. 2*	*No. 3*	*No. 4*	*No. 5*	*No. 6*
41.79	91.59	79.27	42.67	21.25	96.57
18.57	78.25	65.76	58.14	15.96	5.82
21.45	451.35	413.45	87.00	43.21	68.42
4.67	6.47	135.00	45.50	87.65	102.19
432.35	5.60	223.57	235.00	1.92	79.18
14.46	12.35	86.40	57.68	218.19	517.29
5.38	38.00	240.00	68.77	93.15	61.48
432.25	913.50	33.46	433.24	37.92	43.27
165.70	42.34	5.67	700.00	479.99	197.52
21.25	95.70	53.30	55.25	61.29	89.75
86.95	146.05	400.00	24.50	54.37	97.86
1244.82					

Add each column and write down the total obtained. Then prove at once by re-adding the column. Add each column at least four times in order to firmly fix in your mind the combinations used. Nothing will convince you so thoroughly of the perfect accuracy as the fact that you can without previous practice get the correct total time after time without error. If an error is made it will be the direct result of trying to go too fast.

If not made by Felt & Tarrant, it's not a Comptometer

ADDITION RULES

Touch Method

THE touch method is advised for the operator who will use his Comptometer for an hour a day or more and wishes to become a highly efficient operator. It is just as simple as the sight method but admits of almost unlimited speed. A large part of the time spent in operating an ordinary adding machine is lost in looking from the work to the keyboard. The easiest method to operate the Comptometer entirely by touch is to use only the lower half of the keyboard. Thus, every key to be operated is within easy reach of the fingers, without moving the hand up and down the keyboard.

Rule:—

In beginning, place a blotter between the rows of **5** and **6** keys.

To add **9,** strike **4** and **5**
To add **8,** strike **4** twice
To add **7,** strike **3** and **4**
To add **6,** strike **3** twice

To make touch operating very simple, the odd keys **1, 3, 5,** etc., are made with cup-shaped tops and the even keys **2, 4,** etc., with flat tops. With this in mind, add the following columns, beginning at the top of each column and adding down. Use the first finger for adding in the tens column only and the second finger for adding in the units column only. Keep each finger on its own column. Find the keys by feeling, as much as possible.

Remember to put the finger on the key desired, and push it down until you feel it strike bottom. This push-stroke requires practice, for it differs distinctly from the sharp, staccato blow of a typewriter. It is the easiest known stroke on the finger, for the blow of hitting the key is done away with. This method of operating insures absolute accuracy and fair speed in the beginning and ultimately becomes very rapid. For the first few days go very slowly, memorizing the keyboard and acquiring the stroke. Speed will come later.

Examples:

No. 1	*No. 2*	*No. 3*	*No. 4*	*No. 5*	*No. 6*	*No. 7*
22	**33**	**43**	**23**	**67**	**84**	**25**
23	**34**	**33**	**36**	**43**	**47**	**92**
33	**43**	**12**	**43**	**77**	**63**	**14**
34	**32**	**54**	**48**	**65**	**84**	**52**
44	**31**	**23**	**35**	**95**	**93**	**71**
45	**35**	**32**	**49**	**48**	**32**	**42**
55	**53**	**24**	**43**	**64**	**26**	**35**
54	**25**	**25**	**36**	**23**	**82**	**92**
43	**24**	**35**	**42**	**72**	**48**	**25**
353	310	284	355	554	559	448

Add each column and write down the total obtained. Then prove it at once by re-adding the column. Add each column at least four times in order to firmly fix in your mind the combinations used. Nothing will convince you so thoroughly of the perfect accuracy as the fact that you can without previous practice get the correct total time after time without error. If an error is made it will be the direct result of trying to go too fast.

ADDITION RULES

Sight Method

USE only the first and second fingers to add the following four-figure items. First, add the cents only, adding the tens with the first finger and the units with the second finger. Leave the total of the cents in the answer register, and—

Then, add the dollars, *adding the tens with the first finger* and the units with the second finger.

Remember to place the finger on the key desired and push it down until you feel it strike bottom. This push-stroke requires practice, for it differs distinctly from the sharp, staccato blow on a typewriter. It is the easiest known stroke on the finger, for the blow of hitting the key is done away with. This method of operating insures absolute accuracy and fair speed in the beginning, and ultimately becomes very rapid.

For the first few days go very slowly, memorizing the keyboard and acquiring the stroke. Speed will come later.

Examples:

No. 1	*No. 2*	*No. 3*	*No. 4*	*No. 5*	*No. 6*	*No. 7*
24.64	66.43	62.43	24.36	54.56	33.45	66.88
55.33	50.34	17.56	42.67	43.21	65.34	26.19
44.24	83.75	23.67	43.24	32.61	77.21	64.45
26.78	74.96	11.24	62.43	11.33	43.12	72.56
83.33	34.22	12.36	17.56	32.24	63.33	48.91
45.21	94.34	13.36	24.36	82.27	63.44	24.63
46.35	85.09	38.11	21.11	72.56	14.55	74.26
76.67	58.87	47.24	32.35	23.24	54.33	15.41
44.32	75.43	40.54	46.54	72.27	25.98	45.36
58.23	66.21	80.66	22.66	44.45	65.67	28.53
87.68	16.11	90.24	35.24	62.75	53.22	96.71
95.55	44.33	55.89	44.24	43.31	54.43	37.92
78.89	18.76	32.22	71.65	23.52	91.24	45.13
66.43	35.75	36.35	57.26	44.53	86.47	52.37
67.81	47.33	53.67	13.47	92.37	74.68	54.51

Add each column and write down the total obtained. Then prove at once by re-adding the column. Add each column at least four times in order to firmly fix in your mind the combinations used. Nothing will convince you so thoroughly of the perfect accuracy as the fact that you can without previous practice get the correct total time after time without error. If an error is made it will be the direct result of trying to go too fast.

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

ADDITION RULES

USE only the first and second fingers to add the following four and five-figure items. First, add the cents only, adding the tens with the first finger and the units with the second finger. Leave the total of the cents in the answer register, and—

Then, add the dollars, **adding both hundreds and tens with the first finger** and the units with the second finger.

Remember to place the finger on the key desired and push it down until you feel it strike bottom. This push-stroke requires practice, for it differs distinctly from the sharp, staccato blow of a typewriter. It is the easiest known stroke on the finger, for the blow of hitting the key is done away with. This method of operating insures absolute accuracy and fair speed in the beginning and ultimately becomes very rapid.

For the first few days go very slowly, memorizing the keyboard and acquiring the stroke. Speed will come later.

Examples:

No. 1	*No. 2*	*No. 3*	*No. 4*	*No. 5*	*No. 6*	*No. 7*
54.00	22.00	333.64	789.45	73.23	75.45	70.00
73.68	65.98	43.45	555.64	633.75	98.67	543.21
20.00	37.43	400.67	54.67	22.98	45.21	29.00
100.87	60.45	45.00	45.76	32.75	80.00	98.23
32.40	20.65	45.78	40.00	78.21	945.24	378.80
67.68	200.00	78.64	434.54	67.35	31.23	345.45
36.35	23.67	20.00	56.20	87.67	111.34	896.87
33.00	24.24	88.78	64.02	12.50	70.00	454.22
45.65	800.00	98.00	90.87	226.78	76.41	30.00
.45	44.58	63.55	500.00	36.88	13.12	236.79
34.48	366.57	13.75	42.45	78.87	22.11	400.00
50.00	10.00	13.00	75.32	33.34	67.78	323.00
38.44	32.22	67.00	53.40	35.75	400.90	2.30
42.65	45.00	47.33	78.89	443.00	34.42	20.16
66.00	78.23	333.45	334.32	66.43	67.89	678.93

Add each column and write down the total obtained. Then prove at once by re-adding the column. Add each column at least four times in order to firmly fix in your mind the combinations used. Nothing will convince you so thoroughly of the perfect accuracy as the fact that you can without previous practice get the correct total time after time without error. If an error is made it will be the direct result of trying to go too fast.

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINES

The Controlled-Key Comptometer prevents errors due to partial key strokes, common to the older type machines. The Controlled-Key device gives instant signal of an error by locking all the key-board except the column in which the partial stroke was made—and this is left open for correction. Sixty per cent of the value of the Controlled-Key is in the positive signal of an error when made. The other 40% lies in the operator's ability to correct the error without having to re-add the column.

When any key locks in adding it is a positive signal that a partial key stroke was made, either on the last key depressed, or on the key previous to the last.

CONTROLLED KEY RULES

When any key locks in adding, **always** go back and try to operate the **last key depressed.**

RULE 1. If this key goes down, touch the red Correction Button and continue the addition, starting on the **key that locked and signalled the error.**

RULE 2. But if this **last key depressed** is found locked, touch the red Correction Button and **add in the previous key;** then continue the addition, starting on the **key that locked and signalled the error.**

Note: If the "key previous to the last" is larger than the "last key depressed," cancel and re-add the column.

EXAMPLE OF RULE 1

Intentionally press the 40-key part way down. On attempting to strike the 5-key, you find it locked. Following your rule, go back and strike again the **last key depressed** (40), touch the Correction Button and your correction is made. Continue adding, starting on the **key that locked and signalled the error,** "5."

.45
1.25
.67
.45
2.82

EXAMPLE OF RULE 2

In adding this column, intentionally press the 30-key part way down. Then give the 40-key a regular stroke. On attempting to strike the 5-key, you find it locked.

To correct, go back to the **last key depressed** (40), and you will find it locked.

Following the rule, touch the Correction Button and **add in the previous key** (the 30).

This completes the correction and you continue adding, beginning on the key which locked and signalled the error, "5."

.30
.45
.56
2.80
3.20
7.31

IN MULTIPLICATION AND DIVISION

When the key locks under the fingers, the positive danger-signal prevents an error slipping into an answer without the knowledge of the operator. Owing to the speed of the Comptometer, it is simpler and faster on small calculations to cancel and go over the problem than to stop and make the correction.

If not made by Felt & Tarrant, it's not a Comptometer

MULTIPLICATION

Primary Rule

Example:—Multiply 1364 x 57.

PLACE the 1st finger of the left hand on the **50**-key and the 1st finger of the right hand on the **7**-key. Strike the **57** in this position as many times as the right hand figure **(4)** of the multiplicand indicates. Move both fingers one column to the left and strike as many times as indicated by the second figure **(6)** of the multiplicand. Continue to move to the left, striking in each column the multiplier as many times as indicated by the successive figures **(3, 1)** of the multiplicand.

In beginning multiplication confine yourself to the use of the first finger of the right hand and the first finger of the left hand.

After the fingers have been positioned on the keys representing the multiplier, strike slowly, giving each key a full push-stroke, until you feel it strike bottom. Raise the fingers slightly above the keys after each stroke. Speed will develop quickly.

After placing the fingers on the proper keys, then look only at the example while striking the keys, so you will not lose track of or misread any of the figures.

In each of the following examples use the first finger of the left hand for the tens figure of the multiplier and the first finger of the right hand for the unit figure:

No. 1	*No. 2*	*No. 3*	*No. 4*	*No. 5*
24,531	12,456	5,315	23,456	84,143
35	68	64	75	79

No. 6	*No. 7*	*No. 8*	*No. 9*	*No. 10*
35,642	15,341	45,673	36,341	14,683
45	88	28	23	47

No. 11	*No. 12*	*No. 13*	*No. 14*	*No. 15*
89,986	15,366	65,418	94,345	14,312
37	15	31	63	86

No. 16	*No. 17*	*No. 18*	*No. 19*	*No .20*
26,433	46,541	63,222	46,812	46,533
19	91	83	61	11

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

MULTIPLICATION RULES

Example:—Multiply 314 x 45.

PLACE the first and second fingers of the right hand on the keys in the right-hand columns representing the multiplier (45), and strike as many times as indicated by the right-hand figure (4) of the multiplicand; move the fingers one column to the left and strike as many times as the 2nd figure (1) of the multiplicand indicates. Continue to move to the left, striking as many times as the succeeding figure (3) of the multiplicand indicates.

Never multiply with more than two fingers of each hand. Give each key a full stroke.

Multiply each of the following problems, using the fingers as shown by the abbreviations in front of, and following the multiplier. 1 L and 2 L indicate 1st and 2nd fingers of the left hand. 1 R and 2 R indicate 1st and 2nd fingers of the right hand.

Raise the fingers slightly above the keys after each stroke. Never use the thumb.

Examples:

No. 1	No. 2	No. 3	No. 4	No. 5
43	13	47	83	276
1R 34 2R	2R 42 1R	1L 62 1R	1L 37 1R	1L 345 1 & 2R
No. 6	**No. 7**	**No. 8**	**No. 9**	**No. 10**
19	342	43	43	56
2R 54 1R	1L153 2 & 1R	1L 39 1R	1L 13 1R	89 1 & 2R
No. 11	**No. 12**	**No. 13**	**No. 14**	**No. 15**
75	83	28	284	104
1R 46 2R	1L 87 1R	1L 19 1R	1L324 1 & 2R	1L 678 1 & 2R

Where the multiplier has four figures, split the multiplier. Example: Multiply **12,365 x 8,379.** First multiply **12,365** by **79,** leaving the result on the register. Then multiply **12,365** by **83,** starting the **83** in the fourth and third columns.

NOTE: A hyphen indicates where the multiplier should be split.

In all ordinary cases where you are multiplying through with two figures, use both hands—the first finger of each.

No. 16	No. 17	No. 18	No. 19	No. 20
6744	2456	5613	58426	5362
1L 735 1 & 2R	65-35	27-18	53-78	1L 523 1 & 2R
No. 21	**No. 22**	**No. 23**	**No. 24**	**No. 25**
17465	15082	13461	13723	19147
43-45	1L 3104 1 & 2R	19-19	73-65	92-23
No. 26	**No. 27**	**No. 28**	**No. 29**	**No. 30**
4817	5447	6714	3672	5754
37-29	1L 625 1 & 2R	73-68	94-45	16-17

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

LARGE DECIMAL MULTIPLICATIONS

IN MULTIPLYING large numbers containing decimals, it is advisable to strike from the left toward the right. Hold the multiplier with its left-hand figure on the left-hand column of the machine. Strike here as many times as is shown by the left-hand figure of your multiplicand, and then move one column to the right, etc. Point off as many register holes from the left as the sum of the whole places in the multiplicand and multiplier.

Example:—Multiply 12.345 x 4.356

Hold **4356** with the **4** on the left-hand column of the machine and in this position strike once—move each finger one column to the right and strike two times; one more column to the right and strike three times—then four times, then five times. The result as it stands on the register is **053774820**. There are two whole places in **12.345** and one in **4.356,** making together three register holes to point off from the left of the machine, and your answer is **53.77482.**

Note. Hyphen in multiplier indicates that it should be **split.**

Examples:

No. 1	*No. 2*	*No. 3*	*No. 4*
346.21	14.374	2.2635	.35624
1L 4.67 *1 & 2R*	*2 & 1L* 32.78 *1 & 2R*	9.4 -56	91. -47

No. 5	*No. 6*	*No. 7*	*No. 8*
11.463	4627.1	26.516	314.62
1L 37.8 *1 & 2R*	*1L* .846 *1 & 2R*	*2 & 1L* 21.68 *1 & 2R*	7.3 -49

THREE FACTOR MULTIPLICATIONS

(WITHOUT CANCELLING)

WHERE you have three numbers to be multiplied together, like **465x138x 325,** you should multiply **465x138** on the right of the machine, leaving your result **64170** on the register. As **64170** is in the register once, you want it only **324** more times, so you hold **324** with the **4** over the left-hand figure **(6)** of the **64170.** Strike here the number of times indicated—six. Move to the right one column and strike the number of times indicated—four. Move one more column to the right and strike once. Move one more column to the right and strike seven times, and the answer is **20,855,250.** As you move from left to right, the figure in the answer register under the **4**-key on which your finger is, shows the number of times the **324** should be struck.

Example:—Multiply 45x267x457.

45x267=12015 (Let this result stand on the register).

457 minus one, equals **456.**

Holding **456** with the right-hand figure **(6)** over the left-hand figure **(1)** of **12015,** strike successively toward the right **1, 2, 0, 1** and **5** times. Answer, **5,490,855.**

Examples:

No. 9	*No. 10*	*No. 11*	*No. 12*
345x289x56	789x88x546	6452x344x66	33x875x458
No. 13	*No. 14*	*No. 15*	*No. 16*
645x4456x28	389x673x438	75x6489x567	372x44x8879

If not made by Felt & Tarrant, it's not a Comptometer

ACCUMULATIVE MULTIPLICATION

(WITHOUT FRACTIONS OR DECIMALS)

WHERE it is desired to total the products of several multiplications, multiply from the right to the left in the ordinary manner, without canceling between each multiplication.

Example: 346 x 79
1824 x 368
216 x 425

Accumulated Product 790,366

Multiply each of the above without canceling and the accumulated product **790,366** will appear in the register.

ACCUMULATIVE MULTIPLICATION

Permanent Decimal Point Method

(WITH FRACTIONS AND DECIMALS)

ACCUMULATED multiplication is used in hundreds of commercial houses for the proving of both incoming and outgoing bills. In billing we find decimals in both quantity and price, and to be able to accumulate these decimal multiplications, use the following rule:

In most cases hold the price, and it is easy to remember that in the first position the sixth white column of keys is units of dollars and the fifth and fourth black columns are cents.

Example:-

4¾	(4.75)	yards at	$1.25
16½	(16.5)	yards at	.34½c
148¼	(148.25)	yards at	.06¼c

Accumulated Product $20.895

Hold the price **$1.25** with the **1** in the sixth (white) column, and the **2** in the fifth (black) and the **5** in the fourth (black). Multiply toward the right; strike four times, seven times and five times, and the answer shows **$5.9375.** Leave this on the register.

Then hold **34 1/2c** with the **3** in the fifth, **4** in the fourth, and **5** in the third. As the yardage commences not in the units but in the tens column, move one column to the left before commencing the multiplication, then strike from left toward the right, one time, six times and five times, and the accumulation is $11.63. Leave this on the register.

Then hold **6 1/4c** or **625** with the **6** in the fourth (a black) column. As the quantity **148-1/4** begins not in its units but its hundreds, you should move two columns to the left before commencing to multiply. Starting here, strike successively one time, four times, eight times, two times and five times. If at any time any of your fingers run off the keyboard on the right, strike with fingers which still remain on keyboard. Your accumulated answer appears **$20.895.**

Your decimal point in this method always remains in the same position; that is, invariably between the fifth (black) column and the sixth (a white) column. If you keep in mind the fact that we merely use the fourth and fifth (both black) columns as cents, this method is very simple. Always take the position of your price, as above indicated, and should your quantity have more than one whole place, move your position, before multiplying, one column to the left for each additional place. For instance, move one column to the left for **48 3/4,** two columns for **236 3/4,** etc.

Example No. 1

1⅛	yards at	.45c
12¼	yards at	.67⅔c
67	yards at	.50c
6⅜	yards at	$1.25

Example No. 2

16⅔	yards at	.34½c
172	yards at	.06½c
25¼	yards at	$1.89
256	yards at	.19c

If not made by Felt & Tarrant, it's not a Comptometer

SUBTRACTION

To subtract one number from another, proceed as follows:

EXAMPLE: 28.43—4.62

Add 28.43 on the Comptometer.

Pass the fingers of the left hand over the answer register from right to left until there is visible an amount as great or greater than the 4.62 to be subtracted. In doing this there is first visible, "3," then "43," then "843." 843 being larger than 4.62, hold back the cut-off (one of the small levers in front of the first row of keys) to the left of the 8.

Now, with the right hand depress the keys bearing the small figures 461 (see Note 1 on following page), and the result is shown, 23.81.

With 23.81 in the register, subtract 8.73 from it.

Pass the fingers of the left hand over the register from right to left until you can see an amount (23.81), larger than 8.73, then hold back the cut-off to the left of the 2. There is one column of keys intervening between this cut-off and the 8.73 to be subtracted.

Depress the small cipher in this intervening column and then the small 8.72, and the answer, 15.08, appears.

'23.81
08.72 See Rule 4
15.08

RULES

Rule 1. Put the larger amount in the Comptometer as in adding.

Rule 2. Hold back the cut-off at the left of an amount equal to or larger than the amount to be subtracted.

Rule 3. Holding back the cut-off, depress the amount to be subtracted in small figures, less one. (See Note 1 on following page.)

Rule 4. If any column or columns intervene between the cut-off being held back and the amount to be subtracted, depress the small cipher key in such column or columns.

EXAMPLES

The apostrophe in the following examples indicates where the cut-off is to be held back.

To Subtract

21.43	Strike large figures	**'21.43**	
6.42	Strike small figures	**06.41**	See Rule 4
15.01			
170.36	Strike large figures	**1'70.36**	
.85	Strike small figures	**00.84**	See Rule 4
169.51			
9.50	Strike large figures	**'9.50**	
7.04	Strike small figures	**7.03**	See Note 2
2.46			
647.25	Strike large figures	**'647.25**	
460.05	Strike small figures	**460.04**	See Note 2
187.20			
165.20	Strike large figures	**'165.20**	
89.47	Strike small figures	**08 .46**	See Note 4
75.73			

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINES

SUBTRACTION, Continued

To Subtract

42.75	Strike large figures	'42.75	
16.95	Strike small figures	16. 4	See Note 4
25.80			
8.24	Strike large figures	'8.24	
1.27	Strike small figures	1.26	See Note 1
6.97			
257.62	Strike large figures	2'57.62	
36.00	Strike small figures	35.	See Note 1
221.62			
146.25	Strike large figures	1'46.25	
32.41	Strike small figures	32.40	See Note 3
113.84			
65.23	Strike large figures	'65.23	
31.00	Strike small figures	30.	See Note 3
34.23			
8.56	Strike large figures	'8.56	
3.79	Strike small figures	3.78	See Note 4
4.77			
15.60	Strike large figures	'15.60	See Note 4
9.83	Strike small figures	0 .82	See Rule 4
5.77			

NOTES

Note 1. —In subtracting the small amount, use the keys with the corresponding small figures, except for the right-hand figure of value, for which one less must be used.

Right Hand Figure of Value.

To subtract	462	127	3600	4620
Use small figures	461	126	35	461

Note 2. —The small cipher keys should be depressed the same as any other where they come between figures of value—as in 704—but should be disregarded if they come at the right of the amount—as in 7500.

To subtract	704	To subtract	46005
Use small figures	703	Use small figures	46004
To subtract	7500	To subtract	63500
Use small figures	74	Use small figures	634

Note 3. —If the right-hand figure of value in the amount to be subtracted is a "1," then one less is "0," and this small cipher should be struck.

To subtract	3241	To subtract	3100
Use small figures	3240	Use small figures	30

Note 4. —As there are no small 9-keys, pass any column in the amount to be subtracted which contains "9"; except where 9 is the right-hand figure of value, when, of course, the small "8" is used.

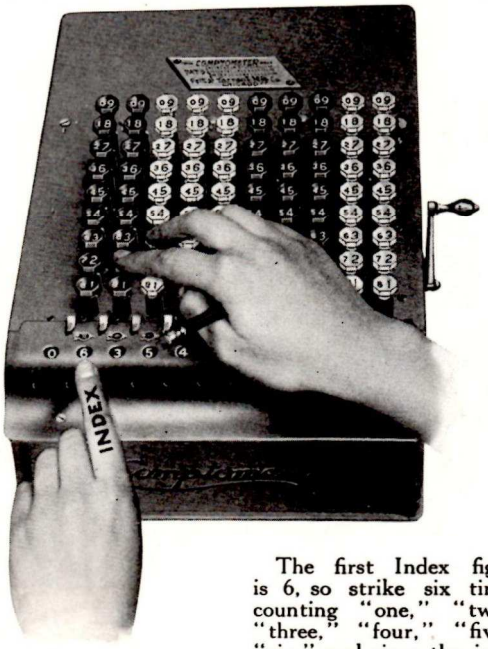
To subtract	8947	To subtract	983
Use small figures	8 46	Use small figures	82
To subtract	1695	To subtract	379
Use small figures	16 4	Use small figures	378

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

GRAPHIC DIVISION

DIVISION on the Comptometer is even more simple than with pencil and paper. Instead of estimating mentally how many times the divisor is contained, the Comptometer tells you exactly. It is useless, however, to attempt division, until thoroughly familiar with the use of the small figures on the keys (see page 18)



Divide 63542 by 77

Add the dividend 63542 on the left side of the keyboard and turn down decimal pointer to agree with the decimal point in the dividend.

For the **answer decimal point,** turn down the pointer that's as many places to the left of dividend decimal pointer as there are ***whole*** number places (figures to the left of the decimal point) in the divisor.

Place fingers on keys numbered in small figures 76 (always hold one less than the divisor). Hold the 76 over 35 of the 635, as the first two figures 63 are too small to contain the divisor. (See cut at left for beginning position.)

First—Catch Up to the Index

(See cut at left)

Multiply the divisor in this position by the Index. (The "Index" is the figure in the register just to the left of the columns in which the divisor is held.) If the Index increases, keep on multiplying until you "catch up" to the Index.

The first Index figure is 6, so strike six times, counting "one," "two," "three," "four," "five," "six," and since the index figure has increased, keep on striking—"seven." On the seventh stroke the number of strokes made ***agrees*** with the Index.

Second—Reduce the Remainder

(See cut at right)

Look at the amount (96) in the registers underneath the divisor keys. This amount is called the remainder. As the remainder is larger than the divisor, 77, continue striking, in the **same position,** until the remainder is reduced to less than the divisor.

One more stroke and the remainder, 96, is reduced to 19.

8 becomes the first answer figure.

Third—Move Divisor One Column to the Right

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

GRAPHIC DIVISION, Continued

Obtain the second answer figure in exactly the same manner as the first

First—Catch Up to the Index

(See cut at right)

Watching the Index, or register figure to the left of the columns you are about to strike, multiply the divisor by the Index.

The Index contains the figure 1, so strike once, counting "one," and as the Index has increased keep on striking—"two."

On the second stroke the number of strokes made ***agrees*** with the Index.

Second—Reduce the Remainder

(See cut at left)

Look at the amount (40) in the registers underneath the divisor keys. As this remainder is already less than the divisor (77), no more strokes are necessary.

2 now becomes the second answer figure.

Third—Move Divisor One Column to the Right

If not made by Felt & Tarrant, it's not a Comptometer

GRAPHIC DIVISION, Continued

All answer figures are obtained in the same manner as the two previous ones

First—Catch Up to the Index

(See cut at left)

Watching the Index, or register figure to the left of the columns we are about to strike, multiply the divisor by the Index.

The Index contains the figure 4, so strike four times, counting "one," "two," "three," "four," ***agreeing*** on the fourth stroke.

Second—Reduce the Remainder

(See cut at right)

Look at the amount (94) in the registers underneath the divisor keys. As this is larger than the divisor, 77, continue striking in the **same position,** until the remainder is less.

One more stroke and the remainder, 94, is reduced to 17.

5 becomes the third answer figure. The complete answer now shows in the registers, 825, with a remainder of 17.

You will note that we continued to divide until an answer figure was obtained in the register to the left of the decimal point first established. If we continued to divide, getting answer figures to the right of the decimal point, we would get a **decimal** remainder.

NOTE: Always Hold the Divisor Keys with Both Hands. The eyes—not the fingers—should follow the "index" and "remainder." In the illustrations one hand points to the "index" and "remainder" because it is easier to instruct in this way.

If not made by Felt & Tarrant, it's not a Comptometer

THE PRINCIPAL POINTS TO REMEMBER IN DIVISION ARE:

Strike the dividend in the machine, using the large figures on the keys.

Turn down a pointer on the machine as many columns to the left of the decimal point in the dividend as there are whole number places in the divisor. This will be the decimal point for the answer.

First—Catch Up to the Index
by striking the divisor (small figures less 1) until the number of strokes made ***agrees*** with the Index. If the Index contains a cipher, of course, no "catching up" is necessary.

Second—Reduce the Remainder
by striking the divisor until the Remainder is less than the divisor. If the Remainder is already less than the divisor, of course, no reducing is necessary.

Third—Move Divisor One Column to the Right.

Rule for Pointing Off When Dividing by a Decimal.

If the divisor is a decimal without zeros, the answer pointer is the same as the dividend pointer; but if the divisor has zeros like .0016, the answer pointer is as many places to the ***right*** *of the dividend pointer as there are zeros immediately to the right of the decimal point in the divisor.*

USE OF SMALL FIGURES

IN striking the divisor according to the small figures (or co-digits) on the keys, always strike the right-hand figure of the divisor, less one. If the right-hand figure or figures be a cipher or ciphers, then strike one less for the first right-hand figure that is not a cipher. For instance, strike according to the small figures as follows:

For	**12**	**For**	**147**
strike small figures	**11**	**strike small figures**	**146**
For	**19**	**For**	**4216**
strike small figures	**18**	**strike small figures**	**4215**

Ciphers are always struck, except when they are the extreme right-hand figures, in which case thay are passed over, and one less is struck for the first right-hand figure that is not a cipher.

For	**704**	**For**	**46005**
strike small figures	**703**	**strike small figures**	**46004**
For	**7040**	**For**	**704000**
strike small figures	**703**	**strike small figures**	**703**

If the first right-hand figure (not counting ciphers) is a "1," then one less is "0," and this cipher should be struck.

For	**3041**	**For**	**3100**
strike small figures	**3040**	**strike small figures**	**30**

Where 9 occurs, there being no small 9, that column is passed over, except when 9 is the right-hand figure (not counting ciphers), then, of course, small 8 is struck.

For	**8947**	**For**	**983**
strike small figures	**8 46**	**strike small figures**	**82**
For	**1695**	**For**	**379**
strike small figures	**16 4**	**strike small figures**	**378**

FELT & TARRANT MFG. CO., 1713-35 N. Paulina St., Chicago, Ill.

If not made by Felt & Tarrant, it's not a Comptometer

Printed in U. S. A.

LONG DIVISION

Easy Method for Dividing by Five or More Figures, Using Four-Place Trial Divisor and Obtaining Three Answer Figures at a Time.

Problem: 4567.89 ÷ 2436.65=

Rule—

Add the dividend from left to right, starting on the left side of the keyboard, and turn down decimal pointer to mark position of the dividend decimal point.

To mark the **answer** decimal point, turn down the pointer which is as many pointers to the left of the dividend decimal point as there are whole places in the divisor. Now turn up the dividend pointer.

Divide by the first **four** figures of the divisor, using the small figures on the keys (not taking one less) and don't stop dividing until you get the **first three answer figures.** After getting the third answer figure, continue to hold with the left hand the position of the two left-hand figures of the divisor.

Place fingers of **right** hand on columns immediately to the right of the two columns held with the left hand, on keys for the remaining unused figures* of the divisor, holding according to the **small** figures and one less for the extreme right hand figure of value of the divisor. *Leave left hand inactive on the keyboard.*

*If it is not convenient to hold all at once with the right hand the remaining unused figures of the divisor, then hold one or two of the remaining figures at a time.

Illustration—

Register shows 04567'89. (') indicates turned down decimal pointer.

Register shows 0'456789.

Divide 0'456789 by 2436 (holding small figures 2436 with two hands) and don't stop dividing until you get the first three answer figures—187. Don't take the fingers of the left hand from keys 24.

Right hand fingers take positions on *small* figures 64 (65 less 1) on columns immediately to right of position held with the left hand.

LONG DIVISION, Continued

Rule —

Depress keys held by the **right** hand the number of times as indicated by the first of the three answer figures already obtained. Then **move** right hand one position to the right and strike the number of times as indicated by the second answer figure. Again **move** right hand one position to the right and strike the number of times indicated by the **third** answer figure already obtained.

The left hand remains inactive on the keyboard.

Resume holding the first four figures of divisor, with position for **first two figures on the columns marked with the left hand,** and the position for next two figures on columns immediately to the right.

(If remainder, in register under columns held, should be equal to or **larger** than the divisor, depress complete divisor once more.)

Move finger position one place to the right, and divide to get the next three answer figures, exactly the same way as the first three were obtained.

It is not necessary to strike in the remaining figures of the divisor the second time, as these figures would not affect a six-place answer.

Illustration —

From left to right, strike small figures 64 once, then move to right and strike eight times, then move to right and strike seven times. Register shows 1'87113545.

Fingers of right hand take position on small figures 36. Right and left hand now hold small figures 2436.

Remainder 1135 is not larger than 2436.

Move both hands one position to the right and divide again by 2436 to get three more answer figures.

Register shows 1'87465. Answer 1.87465.

TABLES USED IN CONNECTION WITH THE CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE

ON pages 22 and 23 are illustrations of tables used in connection with the Comptometer. We have other tables also. Send us samples of your figure work and we will send you the table best fitted to your needs, along with instructions covering their use. Any of these tables will be sent free on request. Following is a brief description of the tables shown in this book:

Reciprocal Table No. 9 is used for making divisions quickly and easily by **multiplication** in percentaging, prorating and other divisions.

Interest Table No. 237 is used for figuring interest on a 365-day basis. The table is used for figuring anything in interest where the rates run from 1 to 12% including 4ths, 8ths, 16ths, and 32nds fractions. It gives the interest on $1000. for one day; so it is only necessary to multiply the decimal on the card by the number of days and the principal.

Insurance Cancellation Table No. 36 shows the decimal part of a year for months and days (360-day basis) on one side and on the reverse side shows the decimal part of a year for days (365 day basis). It is used for figuring elapsed time in connection with interest or insurance.

Lumber Table No. 3 gives result of dividing 12 into any dimension up to 11⅞. This eliminates the division by 12 which is always made in lumber figuring.

Figuring Elapsed Time Table No. 37 shows the decimal part of a year for each day (365-day basis) and is used for figuring interest, discount and insurance cancellations. This card also shows the number of days from the first of the year and the number of days to the end of the year for any day.

Lumber Table No. 5 gives the number of board feet in pieces of various sizes. To obtain the board feet it is only necessary to multiply the board feet shown on the table by the number of pieces.

Gross Table No. 6 gives the decimal for each fractional part of a gross and for each unit. To find the price of 7 dozen and 6 units, or 90 units, it is only necessary to multiply the price per gross by the decimal for this quantity shown on the table. This table is used also for plate glass figuring.

Grain Table No. 7 gives the decimal part of a bushel of any number of pounds of different grains, so that in extending lbs. it is necessary only to multiply the price per bushel by the decimal part of a bushel as shown on the table.

Decimal Equivalents of Fractions Table No. 29 gives the decimal equivalents of fractions from ¼ to 63/64ths, and also 19 useful reciprocals. This table is of particular value in bill and inventory extensions.

Payroll Table No. 35 gives the decimal part of a month for any number of days and eighths of days, so that in figuring payroll, it is only necessary to multiply the monthly rate by the decimal shown on the table, which is for a 24 to 31-day month.

Tonnage Table No. 1 gives the decimal part of a ton of any number of pounds, so it is only necessary to multiply the price per gross ton by the number of tons and by the decimal shown on the card for the fractional part of a ton.

Discount Table No. 4 gives the net of chain discounts. To get the net of a bill, it is necessary only to multiply the gross of the bill by the net shown on the card.

British Currency Table No. 10 gives the decimal part of a £ of any number of shillings and pence and is used in extending sterling.

Interest Table No. 33 gives the interest on $1.00 for one day for rates from ⅛% to 12⅞%. To figure interest, it is only necessary to multiply the amount shown on the table by the principal and then by the number of days.

Cooperage Table No. 32 is used to determine how many staves of one size are equivalent to another size.

Decimal Table No. 26 is used for figuring elapsed time. It gives the decimal part of a 360-day year up to any date. It is a very handy table in connection with the figuring of interest or insurance.

Interest Table No. 24 gives the interest on $1.00 for different numbers of days at different rates. To figure interest, it is only necessary to multiply the principal by the interest shown on the card.

Ten and 100 and 1000 X Inches and Fractions to Eighths Table No. 8 is used only in connection with the Engineering Model Comptometer for figuring beams, pipe, etc. For such work as 4682 x 9⅝ inches this table is especially adapted.

Pounds, Ounces, and Drams Table No. 38 gives the decimals of a 16-oz. pound for any number of drams and ounces. To price any part of a lb. it is only necessary to multiply the price per lb. by the decimal for the number of drams or ounces shown on the card.

British Currency Table No. 12 gives the decimal part of a £ for pence and 32nd fractions. Used for extensions in British currency.

Interest Table No. 184 gives the interest on $100. at 7% for from 1 to 364 days. To figure interest, it is only necessary to multiply the principal by the decimal for the number of days shown on the table.

Iron and Steel Table No. 234 gives the price per 100 lbs. at from .01 to $100. per gross ton, so that when the quantity is lbs. and the price per gross ton, it is only necessary to multiply the number of lbs. by the equivalent decimal for the price per 100 lbs. shown on the table.

Quarters and Pounds of a Cwt. Table No. 22 gives the decimal equivalents of a Cwt. from ½ lb. to 3 qrs. 27 lbs. To make an extension, one simply multiplies the price or rate by the decimal shown for the quantity.

Grain Table No. 191 gives the dockage and the net bushels per 1000 lbs. for different rates of dockage. To find the bushels of dockage or the bushels net, it is only necessary to multiply the number of lbs. by the decimal for the rate shown on the table. This table also gives decimals of a bushel for the number of lbs. for different grains.

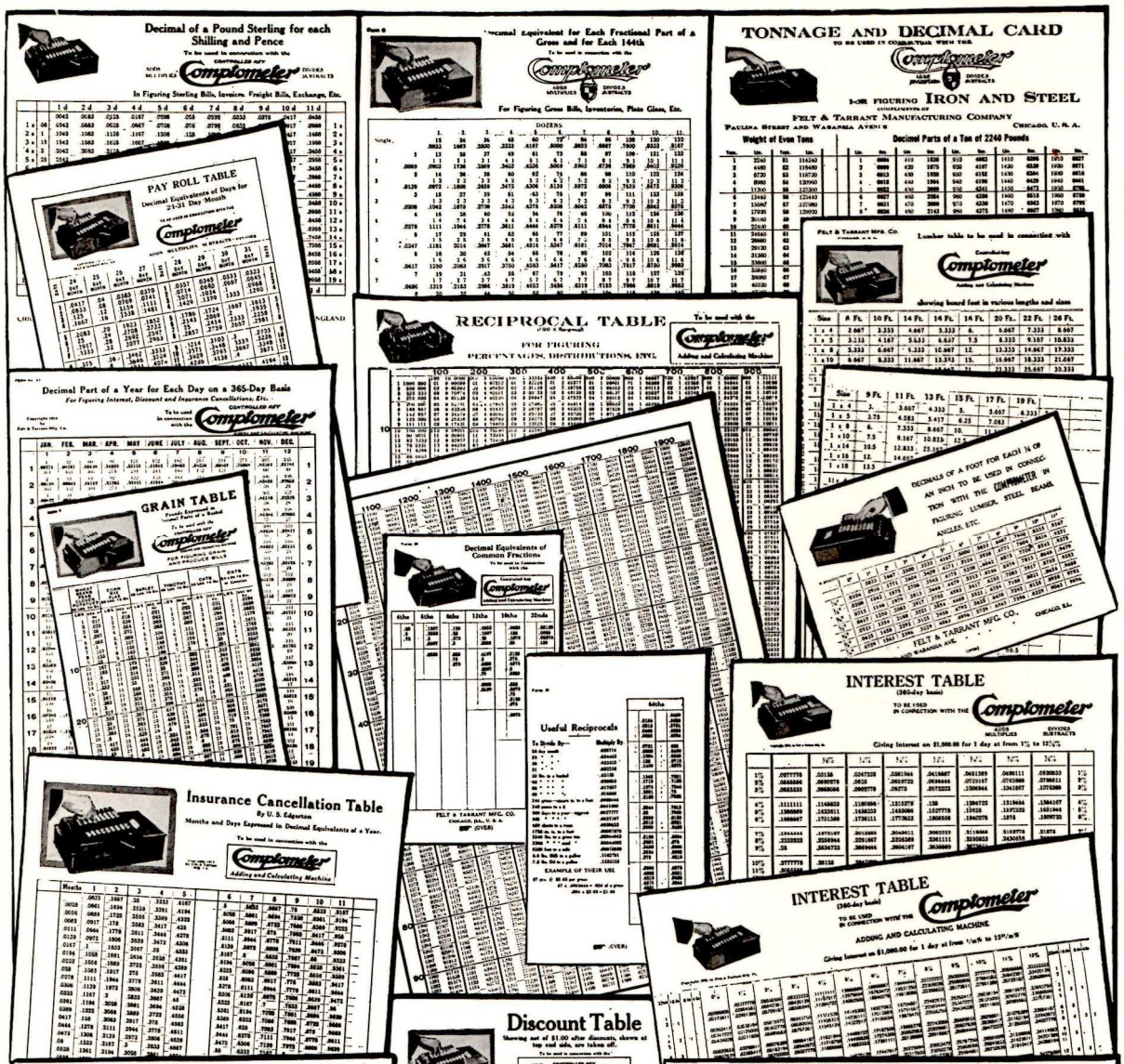
Net Discount Table No. 25 shows the net left from $1.00 after discounting for the required number of days. To get the net, it is only necessary to multiply the principal by the net shown on the table.

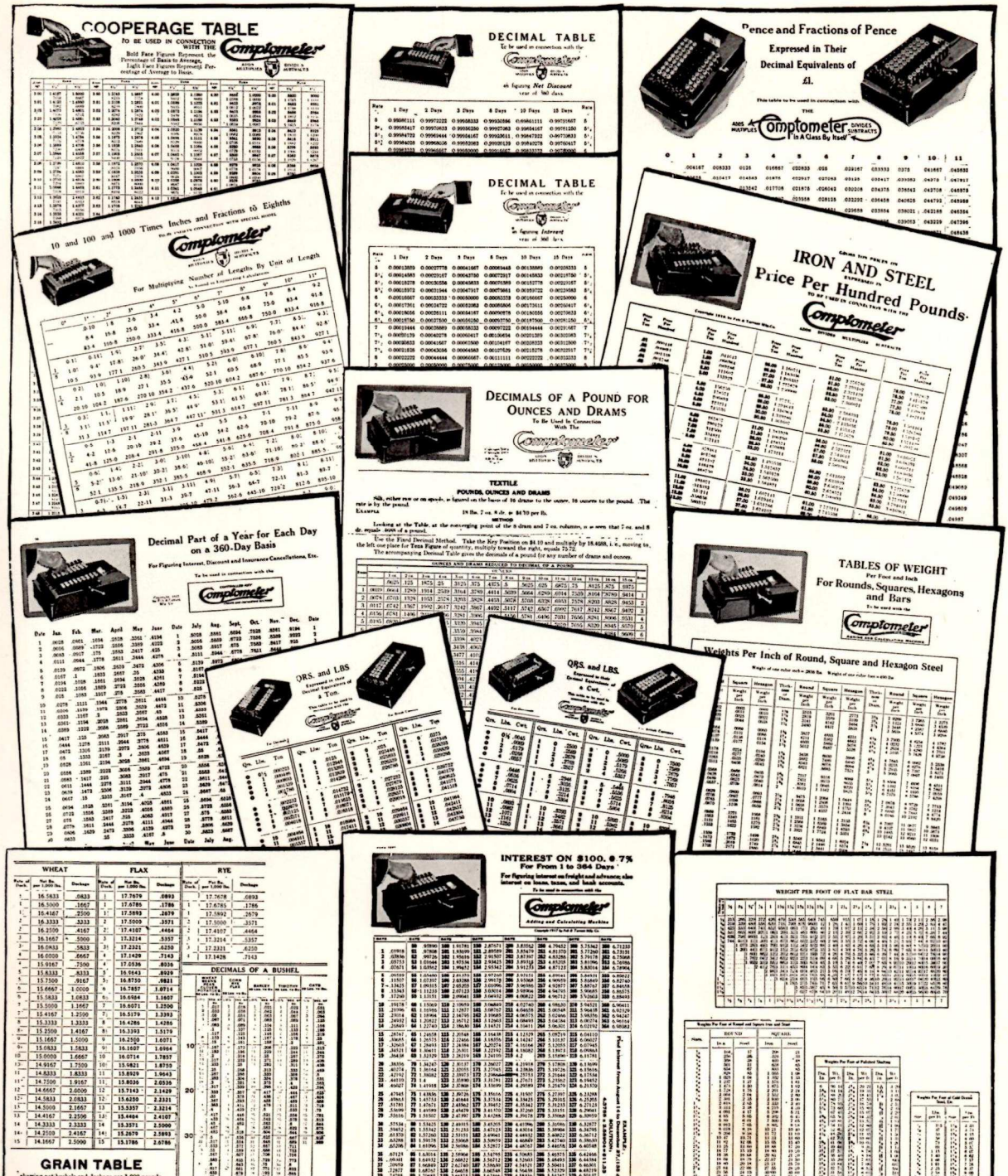
Weights per Foot and Inch for Rounds, Squares, etc. of Different Thicknesses Table No. 205 enables one to get the weight of a piece by simply multiplying the length by the amount shown on the table.

Quarters and Pounds of a Ton Table No. 21 gives decimal part of a ton of any number of Quarters and Pounds. To get the price of any number of Quarters and Pounds, it is only necessary to multiply the price per ton by the amount shown on the table.

If not made by Felt & Tarrant, it's not a Comptometer

CONTROLLED KEY Comptometer ADDING AND CALCULATING MACHINE


Decimal of a Pound Sterling for each Shilling and Pence
Comptometer
PAY ROLL TABLE
Decimal Equivalents of Days for 24-31 Day Months
Comptometer
Decimal Part of a Year for Each Day on a 365-Day Basis
For Figuring Interest, Discount and Insurance Cancellations, Etc.
Comptometer
GRAIN TABLE
Comptometer
Insurance Cancellation Table
By U. S. Edgerton
Months and Days Expressed in Decimal Equivalents of a Year.
Comptometer
Adding and Calculating Machine
365 DAY BASIS
Decimal Equivalent for Each Fractional Part of a Gross and for Each 144th
Comptometer
For Figuring Gross Bills, Inventories, Plate Glass, Etc.
DOZENS
RECIPROCAL TABLE
Comptometer
FOR FIGURING
PERCENTAGES, DISTRIBUTIONS, ETC.
Adding and Calculating Machine
Decimal Equivalents of Common Fractions
Comptometer
Useful Reciprocals
FELT & TARRANT MFG. CO.
PAULINA STREET AND WABANSIA AVENUE
CHICAGO, U. S. A.
(OVER)
Discount Table
Showing out of $1.00 after discounts, shown at top and side, are taken off.
Comptometer
FELT & TARRANT MANUFACTURING COMPANY
PAULINA STREET AND WABANSIA AVENUE
CHICAGO, U. S. A.
TONNAGE AND DECIMAL CARD
Comptometer
FOR FIGURING IRON AND STEEL
FELT & TARRANT MANUFACTURING COMPANY
PAULINA STREET AND WABANSIA AVENUE
CHICAGO, U. S. A.
Weight of Even Tons
Decimal Parts of a Ton of 2240 Pounds
Lumber table to be used in connection with
Comptometer
showing board feet in various lengths and sizes
DECIMALS OF A FOOT FOR EACH ¼ OF AN INCH TO BE USED IN CONNECTION WITH THE COMPTOMETER IN FIGURING LUMBER, STEEL BEAMS, ANGLES, ETC.
FELT & TARRANT MFG. CO.
CHICAGO, ILL.
INTEREST TABLE
(360-day basis)
TO BE USED IN CONNECTION WITH THE
Comptometer
Giving Interest on $1,000.00 for 1 day at from 1% to 12½%
INTEREST TABLE
(360-day basis)
TO BE USED IN CONNECTION WITH THE
Comptometer
ADDING AND CALCULATING MACHINE
Giving Interest on $1,000.00 for 1 day at from 1/8% to 15%
INTEREST TABLE
(360-day basis)
TO BE USED IN CONNECTION WITH THE
Comptometer
ADDING AND CALCULATING MACHINE
Giving Interest on $1,000.00 for 1 day at from 1/8% to 12%
FELT & TARRANT MANUFACTURING COMPANY
PAULINA STREET AND WABANSIA AVENUE
CHICAGO, U. S. A.



For a Description of the Use of These Tables See Page 21

Felt & Tarrant, Ltd., Chicago, Ill.

Form 112
Printed in U. S. A.